

Application Number 10/521871

Response to the Office Action dated 2/13/09 and Advisory Action dated 5/18/09

### REMARKS

Favorable reconsideration of this application is requested in view of the following remarks.

Applicants appreciate the Examiner's courtesy in confirming the entry of the Amendment canceling claims 34 and 35, as noted in the interview summary mailed June 1, 2009. The cancellation of these claims is reflected in the above claim list.

Claim 1 has been amended as supported by the specification at page 19, lines 18-23 and page 25, lines 31-35.

Claims 36-38 have been added as supported by the specification at page 25, lines 28-30, page 26, lines 4-6, and page 26, lines 6-9, respectively.

Claims 1-5, 7, 9, 12, 17-26, and 30-32 have been rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (Japanese Patent Application Publication No. 2002-203576). Applicants respectfully traverse this rejection.

Suzuki discloses an electrolyte film that includes a film support body having through holes and an ion conductive substance introduced inside the through holes (see abstract). Suzuki further discloses that the ion-conductive substance is preferably solid polymer electrolyte (see para. [0039]). Suzuki fails to disclose a water-repellent substance provided in the through holes in addition to the organic molecules containing ion exchange groups bonded to an inner surface of the through holes as claim 1 recites. Even if the ion-conductive substance or a catalysts material of Suzuki were considered as the water-repellent substance of claim 1, which Applicants do not concede, Suzuki fails to disclose that the water-repellent substance is a polymer of a precursor material of the water-repellent substance polymerized in capillaries that remains in an inner portion of the through hole as claim 1 recites.

Further, Suzuki merely discloses a general range of a cross-sectional area of through holes from  $0.2 \text{ nm}^2$  to  $30,000 \text{ nm}^2$  (see para. [0032]) and does not disclose or

Application Number 10/521871

Response to the Office Action dated 2/13/09 and Advisory Action dated 5/18/09

suggest that the smallest cross-sectional area of each through hole must be in the range of 3-300 nm<sup>2</sup> as claim 1 recites. By limiting the smallest area of each through hole in this range, a size of the capillaries that remain in an inner portion of the through hole can be decreased, and it is possible to provide an electrolyte membrane in which fuel cross-over is further suppressed (see page 19, lines 18-23 of the specification).

In addition, an electrolyte material of a solid polymer electrolyte such as perfluorocarbon-sulfonic acid system polymer, which was considered as a water repellent substance in the Advisory Action, would not be suitable to pass through the through hole whose smallest area is 3-300 nm<sup>2</sup> as claim 1 requires. Thus, Suzuki cannot suggest the combination of features required by claim 1.

Accordingly, claim 1 is distinguished from Suzuki. Claims 2-5, 7, 9, 12, 17-26, and 30-32, which ultimately depend from claim 1, are also distinguished from Suzuki for at least the same reasons as discussed above, and this rejection should be withdrawn.

Claims 6, 8, and 33 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Japanese Patent Application Publication No. 2002-203576) as applied above, in view of Yamaguchi et al. (Japanese Patent Application Publication No. 2002-083612). Applicants respectfully traverse this rejection.

Claims 6, 8, and 33, which ultimately depend from claim 1, are distinguished from Suzuki for at least the same reasons as discussed for claim 1 above.

Yamaguchi discloses a fuel cell having an electrolyte, which includes the proton conductive first and second polymers formed in fine-pores of a porous substrate (see para. [0009]). Yamaguchi, however, fails to disclose that the second polymer is a water-repellent substance. Yamaguchi also fails to disclose the smallest cross-sectional area of each through hole that is in a range of 3-300 nm<sup>2</sup> as claim 1 requires. Accordingly, Yamaguchi does not remedy the deficiencies of Suzuki, and this rejection should be withdrawn.

Claims 11 and 13-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Japanese Patent Application Publication No. 2002-

Application Number 10/521871

Response to the Office Action dated 2/13/09 and Advisory Action dated 5/18/09

203576) as applied above, and in view of Yamada (U.S. Patent No. 5,213,910).

Applicants respectfully traverse this rejection.

Claims 11 and 13-14, which ultimately depend from claim 1, are distinguished from Suzuki for at least the same reasons as discussed for claim 1 above.

Yamada discloses a solid electrolyte type fuel cell having a solid electrolyte film (see abstract and Fig. 3). Yamada, however, fails to disclose that a water-repellent substance, which is a polymer of a precursor material of the water-repellent substance polymerized in capillaries in an inner portion of the through hole, is provided as claim 1 recites. Further, Yamada fails to disclose the smallest cross-sectional area of each through hole that is in a range of 3-300 nm<sup>2</sup> as claim 1 requires. Accordingly, Yamada does not remedy the deficiencies of Suzuki, and this rejection should be withdrawn.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.



Dated: June 15, 2009

DPM/my/mz/jls

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